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February 19, 1991

Meeting Minutes Transmittal/Approval
Unit Managers Meeting: 1100-EM-1 Operable Unit
450 Hills, Room 47
Richland, Washington
January 23, 1991

From/
Appvl.: Robert K. Stewart Date: 2/20/91
Robert K. Stewart, 1100-EM-1 Unit Manager, DOE-RL (A6-95)

Appvl.: David R. Einan Date: 25 Feb 91
David R. Einan, 1100-EM-1 Unit Manager, EPA (B5-01)

Appvl.: L Goldstein Date 2/28/91
Larry Goldstein, 1100-EM-1 Unit Manager, WA Department of Ecology

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Meeting Minutes are attached. Minutes are comprised of the following:

Attachment #1 - Meeting Summary/Summary of Commitments and Agreements
Attachment #2 - Agenda for the 1100-EM-1 Meeting
Attachment #3 - Attendance List
Attachment #4 - Commitments/Agreements Status List
Attachment #5 - Comparison of Work Plan Supplement Comments
Attachment #6 - Transmittal of QAPP for Fourth Round Groundwater Analysis
Attachment #7 - Citation on Minimum Functional Standards for Solid Waste Handling
Attachment #8 - Draft Meeting Minutes, 1/14/91 Meeting on Additional Geophysical Investigation at Horn Rapids Landfill.
Attachment #9 - Results of Radiation Survey
Attachment #10- Proposal for Reduction of Ground Water Monitoring Analyses
Attachment #11- 1100-EM-1 Operable Unit Dates for Deliverables
Attachment #12- 1100-EM-1 Operable Unit Schedule of Phase II RI Activities

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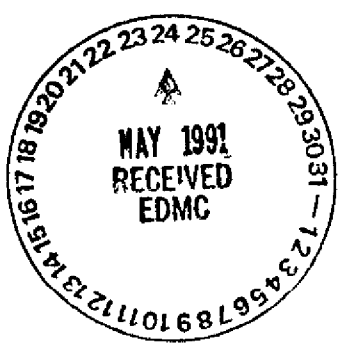
Prepared by: Kathy Davis Date: 3/4/91
SWEC Support Services

Concurrence by: R. W. Clark Date: 3/26/91
WHC RI Coordinator



1100-EM-1 Operable Unit Managers Meeting
January 23, 1991

Distribution:

Chuck Cline, WDOE
Ward Staubitz, USGS
Mike Thompson, DOE-RL (A6-95)
Mary Harmon, DOE-HQ, (EM-442)
Kathy Davis, SWEC (A4-35)
John Stewart, USACE
Jack Waite, WHC (B2-35)
Tom Wintczak, WHC (B2-15)
Mel Adams, WHC (H4-55)
Steven Clark, WHC (H4-55)

Brian Sprouse, WHC (H4-22)
Diane Clark, DOE-RL (A5-55)
Bill Price, WHC (SO-03)
Don Kane, Battelle EMO (K1-74)
Donna Lacombe, PRC
Jim Patterson, WHC

Ronald D. Izatt (A6-95)
Director, DOE-RL, ERD
June M. Hennig (A5-21)
DOE-RL, WMD

Roger D. Freeberg (A6-95)
Chief, Rstr. Br., DOE-RL,ERD

Steven H. Wisness
TPA Proj. Mgr.
Richard D. Wojtasek (B2-15)
Prgm. Mgr. WHC

Kaerae Parnell (H4-18)
Doug Sherwood, EPA (B5-01)
Michael Neely, PNL (K6-96)

ADMINISTRATIVE RECORD: 1100-EM-1; Care of Susan Wray, WHC (H4-51C)

Please contact Kathy Davis if there are any deletions or additions to this list.

Attachment #1

Meeting Summary and Summary of Commitments and Agreements

1100-EM-1 Operable Unit Managers Meeting
January 23, 1991

1. Bob Stewart (DOE) was provided a letter at this Unit Managers Meeting (UMM) from EPA which provides direction *concerning certain RI activities.*

2. Steve Clark (WHC) handed out copies of the well inventory, which Golder recently completed, to the regulators. This inventory documents the wells in the North Richland area and points out potential receptors. Doug Morrell (Golder) described the report and summarized the information contained within the report. Bob Stewart (DOE) asked whether a copy had been sent to the City of Richland, and if not, he said a copy should be sent.

Action Item #11EM1.55: Review the well inventory report to determine if the report is sufficient to send to the City of Richland, including an opinion from WHC Legal on the release. Draft a letter to transmit the report. Action: Steve Clark (WHC) (1/23/91)

3. Bill Wright (Golder) gave a report on the status of the ongoing soil gas survey at the Horn Rapids Landfill and the South Pit. A preliminary TCE plume delineation was presented. No localized source within the vadose zone of the landfill is indicated.

4. Lonnie Swenson presented a report on the status of the land use assessment. Four agencies have been contacted: Benton County Planning, Port of Benton, City of Richland, and WHC-Site Development and Planning. Still to be contacted are the Dept. of Wildlife and the WA Natural Heritage Program. Public and tribal participation have been deferred.

5. Monitoring well MW-18 at the 1100-EM-2 subunit is being drilled. It is expected to have the casing and screen installed by the end of the week, and the development completed by the end of next week (Feb. 1). The well will be sampled in the next round of groundwater sampling, at the end of February. No volatiles were detected during drilling, and the well is similar to other wells in the area. Groundwater is at 48 feet below the ground surface. The geological logs and other information will be put into the same format as the RI report.

6. The action items status was updated. There were discussions on some of the items:

   Item #48 - Steve Clark (WHC) stated that all the comments mesh quite well, except for the issue of drilling into the Horn Rapids Landfill. A comparison of the Work Plan Supplement comments was handed out. (see Attachment #5). The question was raised as to whether the Work Plan Supplement could be finalized. Bob Stewart (DOE-RL) stated that he would

need to look at the EPA letter and see what actions need to be taken next.

Item #50 - Steve Clark (WHC) handed out copies of the QAPP requested. A copy of the cover letter to the plan is included as Attachment #6.

Item #52 - Lonnie Swenson (Golder) presented a report on the meeting which was held to discuss the preliminary screening in Section 4 of the RI report. It was felt that the meeting was productive, but Donna Lacombe (PRC) stated that some questions remain. Donna Lacombe will have the PRC toxicologist submit additional questions in writing, prior to another meeting.

Item #53 - Bill Wright (Golder) distributed a handout for the citation on Minimum Functional Standards for Solid Waste Handling. This is included as Attachment #7.

Item #54 - The meeting on additional geophysical investigation at the Horn Rapids Landfill was held on 1/14/91. Draft meeting minutes are included as Attachment #8. Bob Stewart (DOE-RL) requested that the statement "The position of DOE-RL ..." be modified in the final minutes to reflect that "it appears to be the case that ...." A Statement of Work for the proposed geophysical investigation will be available soon.

Action Item #11EM1.56: Representatives from Golder and PRC are to meet to continue discussion on the toxicology issues. After the meeting they will notify the DOE and the regulators as to what the next step should be. Action: Lonnie Swenson (Golder) and Donna Lacombe (PRC) (1/23/91)

7. The radiation surveys at the South Pit and the discolored soil site did not identify contamination. A report was prepared to document the surveys, and it is included as Attachment #9.

8. The proper sequencing of the RI and FS will occur, due to the decision to defer finalizing of the RI Work Plan Supplement. February 21, 1991 is 60 days for the receipt of comments on the FS from EPA and Ecology.

9. The disposition of comments on the RI Phase 2 have been returned to all parties who commented. Dave Einan (EPA) is preparing a response to the proposed dispositions. Merl Lauterbach (WHC) asked whether WHC should proceed on a month-to-month basis based on the UMM, since there is no approved work plan. Dave Einan (EPA) said that yes, this would be a good plan. Bob Stewart (DOE-RL) asked whether there is an official hold on the completion of the Work Plan Supplement pending the comments from Dave Einan (EPA). Dave Einan (EPA) agreed that the completion date for the Work Plan Supplement would be 30 days after the receipt of comments from EPA on the DOE responses.

10. Scheduled work was discussed. Monitoring well MW-18 is being drilled and will be completed within the month of January. The report on the soil gas survey is nearing completion. A statement of work for the geophysical work at the Horn Rapids Landfill is being prepared. Soils sampling at the Ephemeral Pool is scheduled. Merl Lauterbach stated that the 1100 area is not one of the areas on the priority list for a Hazard

Assessment. The Safety Analysis group will not address the 1100 area until after March 15. No intrusive activities can be performed in the landfill until the Hazard Assessment is complete.

11. Steve Clark (WHC) proposed a reduced list of compounds for continued ground water monitoring in 1100-EM-1 (see Attachment #10). The proposal is for analyzing for only those contaminants of concern in each well during three quarters, and running a full CLP and drinking water standards analysis during the fourth quarter. Adoption of this proposal would mean that for some wells there would be no assays at all for 3 quarters, since we have 4 quarters with no contaminants detected. Ward Staubitz (USGS) requested a specific list for each well before considering the proposal.

Action Item #11EM1.57: Identify, by well, the contaminants to be analyzed under the proposed modification to the groundwater sampling program. Action: Steve Clark (WHC) (1/23/91)

12. It was noted that Stan Arlt of the City of Richland has expressed concern about the perception of problems by the public and he wants to be kept informed. Also, he is concerned about continued monitoring of 1100-EM-1.

13. Bill Wright (Golder) stated that 1100-EM-2 and 1100-EM-3 could have groundwater contamination plumes, and 1100-EM-1 has documented groundwater contamination associated with 1100-EM-2. He proposed that the investigations be re-prioritized. Bob Stewart (DOE-RL) stated that this needs to be considered within the context of the aggregate area management strategy.

Action Item #11EM1.58: Send a memo to Steve Clark (WHC) documenting the argument presented regarding the proposed re-prioritization of investigations and the application of the aggregate area approach to the entire 1100 area CERCLA investigations. Action: Bill Wright (1/23/91)

14. John Stewart (USACE) proposed that the Work Plan Supplement go through and then the USACE would transmit a letter saying that USACE was replacing WHC and submitting the USACE QA Project Plan as a supplement. Dave Einan (EPA) agreed in principle with the proposal.

Attachment #3

Attendance List

1100-EM-1 Unit Managers Meeting
January 23, 1990

Name	Organization	1100-EM-1 Responsibility	Phone
Allender, Chip	B&C	Ecology Contractor	503-244-7005
Hildebrand, R. A.	DOE-RL	EOB	509-376-7287
Stewart, R. K.	DOE-RL	Unit Manager	509-376-6192
Cline, Chuck	Ecology	Geohydrologist	509-438-7556
Goldstein, Larry	Ecology	Unit Manager	206-438-7018
Cross, Steve	Ecology	CERCLA Unit	206-459-6615
Osweiler, Mike	Ecology	100 DR-1	206-438-7016
Einan, Dave	EPA	Unit Manager	509-376-3883
Cheatham, Terry	ES	Sr. P. M.	509-943-0909
Wright, Bill	Golder	Consultant to WHC	206-883-0777
LaCombe, Donna	PRC	EPA Consultant	206-624-2692
Shuster, Jerry	PRC	EPA Consultant	206-624-2692
Davis, Kathy	SWEC	GSSC for DOE/RL	509-376-0412
Fassett, Doug	SWEC	GSSC for DOE/RL	509-376-3136
Fryer, Bill	SWEC	GSSC for DOE/RL	509-376-3136
King, Joe	SWEC	GSSC for DOE/RL	509-376-9707
Miklavcic, Fred	USACE	Env. Eng. Br.	509-522-6531
Greenwald, Wendel	USACE		
Staubitz, Ward	USGS	EPA Consultant	206-593-6510
Clark, Steve	WHC	OU Tech. Coord.	509-376-1513
Lauterbach, Merl	WHC	WHC	509-376-5277
Patterson, James	WHC	ER Program	509-376-0568
Singleton, Kevin	WHC	FTL	509-376-4526

Attachment #4

Commitments/Agreements Status List

1100-EM-1 Operable Unit
January 23, 1991

Item No.	Action	Status
11EM1.46	WHC will prepare a draft letter for Bob Stewart to be sent to ANF to inform them of the fourth round of groundwater well sampling. Action: Steve Clark (9/19/90, EM1-UMM)	Closed The fourth round of well sampling was completed 12/5/90. ANF sampled selected monitoring wells for TCE at the end of October (10/16/90).
11EM1.48	Determine how the regulator's comments and DOE internal review comments on the work plan will be handled. In what order will the comments be addressed and incorporated. Evaluate the value of simultaneous review by the regulators and DOE. Action: Bob Stewart (10/16/90, EM1-UMM)	Closed Comparisons of comments on the RI Phase II supplemental work plan showed no significant conflict between comments and no change to the scope of work.
11EM1.49	Schedule a meeting with the Army Corps. of Engineers, Golder, EPA, and WHC to discuss the statistical treatment of the data. The regulators will provide DOE with direction on work that is unnecessary at the time of the meeting. Action: Bob Stewart (10/16/90)	Closed The meetings were conducted on 10/25 and 10/31/90. Agreements are reflected in the dispositions to EPA comments on the RI Phase I report. (11-6-90)
11EM1.50	Provide EPA with QA information, including methods and quantitation limits for sample analyses (Appendix A, Table 1 in the supplemental work plan). Action: Steve Clark (11/14/90)	Closed Copies of the PNEL QAP were provided at the 1/23/91 UMM to complete the action item.

11EM1.51	Provide Dave Einan (EPA) with the analytical data. Action: Bob Stewart (11/14/90)	Closed Copies were provided. (Attachment #7 to the 12/19/90 UMM minutes.)
11EM1.52	Lonie Swenson at Golder will set up a meeting between Golder's toxicologist and the regulators to discuss the toxicity screening procedure. (12/19/90)	Closed The meeting was held on 1/18/91 at Golder's offices in Redmond, WA.
11EM1.53	Laura Johnson at Golder will provide the citation on minimum functional requirements for landfills. (12/19/90)	Closed The citation has been provided to DOE-RL (R. K. Stewart).
11EM1.54	WHC (working with PNL) will set up a meeting regarding the geophysics done in the landfill for information only. (12/19/90)	Closed The meeting was held on 1/14/91.

PHASE II - RI WORK PLAN COMMENT COMPARISONS

COMMENT	EPA/ECOLOGY	SECONDARY SOURCE	OTHERS
1. Work Plan should include summary data.		General comment #1 (HAZWRAP)*	General comment #2 (ANL)*
2. Additional sampling for gross alpha and gross beta low-level radiation contamination is recommended.		Comment #14 (ACE)*	Comment #4, 14 (WHC)***
3. Details of the 1100 Area are needed, including location of 1171 Building.		Comment #5 (ANL)*	Comment #9 (WHC)***
4. The permanent soil-gas monitoring network is not justified.		Comment #21 d,e (ACE)*	Comment #20 (GSSC)*
5. Time sequenced water table maps are needed.		Comment #25 (GSSC)*	Comment #17 (WHC)***
6. Because of suspected low-level radiation contamination, soil samples are to be analyzed. Recommend deleting activity.		Comment #28 (ACE)*	Comment #19 (WHC)***
7. Sample differently to detect potential low-level radiation contamination.	7. Comment #4-5, 4-13 (EPA)**	Comment #18 (WHC)***	
8. Improve Figure 4.1, 4.2 and 4.3.		Comments #29, 30, 31 (DOE-HQ)*	Comment #32 (HAZWRAP)*
9. Installation or location of a groundwater monitoring well is questioned.	Comment #4-7 (EPA)**	Comments #35 (ACE)*	Comment #36 (HAZWRAP)*
10. Sampling practice is questioned.		Comments #20,23,24 (WHC)***	
11. Questions are raised regarding the installation of a permanent soil-gas monitoring network.	Comments #4-10, #4-11 (EPA)**	Comments #21, #49 (ACE)*	

PHASE II - RI WORK PLAN COMMENT COMPARISONS

COMMENT	EPA/ECOLOGY	SECONDARY SOURCE	OTHERS
12. Sampling for Hexavalent chromium is questioned.	Comment #4-15 (EPA)**	Comments #21, #? (ACE)*	Comment #44 (GSSC)*
13. Add contour intervals to Figure 4-11.	Comment #4-12 (EPA)**	Comment #27 (WHC)***	
14. Pump design details are questioned.	Comments #4-20, 4-21 (EPA)**	Comment #51 (ANL)*	Comment #52 (GSSC)*
15. Pumping times are questioned.	15. Comment #4-22, (EPA)**	15. Comment #53 (GSSC)*	

CONFLICT DESCRIPTION	EPA/ECOLOGY	SECONDARY SOURCE	OTHERS
1. One comment concludes there is no cause for concern regarding groundwater contamination at the Paint and Solvent Pit; the other comment suggests that the proposed additional well is acceptable.	Comment #16 (ACE)*	Comment #17 (ACE)*	

* Summary of Review Comments, Remedial Investigation Phase 2 Supplemental Work Plan 1100-ME-1 Operable Unit.

Reviewers: ACE, ANL, DOE-HQ, DOE-RL PMD, DOE-RL QAD, GSSC, HAZWRAP.
December 17, 1990

** Technical Review Comments, Remedial Investigation Phase 2 Supplemental Work Plan 1100-EM-1 Operable Unit, Hanford Site.

Reviewer: EPA/Ecology
November 21, 1990

*** WHC Comments, RI Phase II Supplemental Work Plan, Hanford Site, 1100-EM-1-OU. December 5, 1990.

ATTACHMENT 6

1100-EM-1 OPERABLE UNIT
UNIT MANAGER'S MEETING

January 23, 1991

TRANSMITTAL OF QUALITY ASSURANCE PLAN FOR FOURTH ROUND GROUND WATER ANALYSES PERFORMED AS PART OF SOIL GAS SURVEY SAMPLING IN THE 1100-EM-1 OPERABLE UNIT

SCOPE

The attached documentation presents the analysis methods and guidelines (Attachment A) and Quality Assurance Plan (Attachment B) for the ground water analyses performed in support of soil gas surveys and as part of the fourth round of ground water sampling specified in the Remedial Investigation/ Feasibility Study Work Plan for the 1100-EM-1 Operable Unit (DOE/RL 88-23, August 1989). Analyses were conducted for the parameters on the Contract Laboratory Program (CLP) Target Compound/Analyte List (TCL/TAL), plus drinking water and indicator parameters for landfills (WAC-3-4-490).

PROCEDURES

Analytical laboratory services for the water samples were procured by Golder Associates Inc. (GAI) from Pacific Northwest Environmental Laboratory, Inc. (PNEL), Redmond, Washington. PNEL provided all sample and shipping containers as part of their services.

Partly in support of soil gas surveys by GAI, Westinghouse Hanford Company (WHC) personnel obtained ground water samples from 19 monitoring wells associated with the Horn Rapids Landfill, 1100-2, and UN-1100-6 subunits between November 26 and December 5, 1990. The wells in the 1100-EM-1 operable unit not associated with these subunits were sampled by WHC personnel during the same time interval and the samples sent to the Martin-Marietta K-25 Lab in Oak Ridge, Tennessee, for analysis. The wells sampled in each of the four rounds of ground water sampling and the laboratories performing the CLP analyses are listed in Table A (attached).

Activities associated with the ground water sampling are controlled by WHC-CM-7-7, the Environmental Investigations and Site Characterization Manual (EII's), as well as other site-wide procedures and policies governing radiation surveys and the packaging and shipping of samples. General sampling procedures are described in EII 5.8, Groundwater Sampling.

RESULTS

GAI will provide data validation services and will deliver a data validation report, supporting data packages, and chain of custody reports in the final deliverable report of the soil gas surveys. Complete data packages will be filed in protected storage.

TABLE A

1100-EM-1 Operable Unit

CLP ANALYIS OF GROUND WATER MONITORING WELL SAMPLES

Temporary Well Number	Hanford Well Number	CLP Laboratory 1st Rd 2/90	2nd Rd 5/90	3rd Rd 8/90	4th Rd 11/90
MW-1	S41-E11	W	W	W	K
MW-2	S34-E10	W	W	W	P
MW-3	S41-E12	W	W	W	K
MW-4	S38-E12A	W	W	W	P
MW-5	S38-E12B	W	W	W	P
MW-6	S37-E11	W	W	W	P
MW-7	S38-E11	W	W	W	P
MW-8	S31-E08	W	W	W	P
MW-9	S32-E08	W	W	W	P
MW-10	S30-E10A	W	W	W	P
MW-11	S30-E10B	W	W	W	P
MW-12	S31-E10A	W	W	W	P
MW-13	S31-E10B	W	W	W	P
MW-14	S31-E10C	W	W	W	P
MW-15	S31-E10D	W	W	W	P
MW-17	S41-E13C	W	W	W	K
	S37-E14	W	W	W	P
	S40-E14	W	W	W	K
	S41-E13A	W	W	W	K
	S41-E13B	W	W	W	K
	S43-E12	W	W	W	K
	S27-E14		W	W	P
	S29-E12		W	W	P
	S30-E15A		W	W	P
	S31-E13		W	W	P
	S32-E13A		W	W	P
Well Field(W) Composite		W	W	W	K
Well Field(E) Composite		W	W	W	K

W: Weyerhaeuser Analytical & Testing Services, Tacoma, WA
P: Pacific Northwest Environmental Laboratory, Inc., Redmond, WA
K: Martin Marietta Energy Systems, Inc., K-25 Laboratory, Oak Ridge, TN

[illegible]

(b) How inspect[illegible] [illegible]ucted and their frequency;

(c) Actions to take [illegible] explosion;

(d) Actions to take if leaks are detected;

(e) Corrective action programs to take if ground water is contaminated;

(f) Actions to take for other releases (e.g., failure of run-off containment system);

(g) How equipment such as leachate collection and gas collection equipment are to be maintained;

(h) A safety plan or procedure; and

(i) Other such details as required by the jurisdictional health department.

(3) Recordkeeping. Each owner or operator shall maintain daily operating records on the weights (or volumes), number of vehicles entering and, if available, the types of wastes received. Major deviations from the plan of operation shall also be noted on the operating record.

(4) Reporting. Each owner or operator shall prepare and submit a copy of an annual report to the jurisdictional health department and the department by March 1 of each year. The annual report shall cover facility activities during the previous year and must include the following information:

(a) Name and address of the facility;

(b) Calendar year covered by the report;

(c) Annual quantity, in tons, or volume, in cubic yards, and estimated in-place density in pounds per cubic yard of solid waste handled, by type of solid waste if available, for each type of treatment, storage, or disposal facility, including applicable recycling facilities; and

(d) Results of ground water monitoring required in WAC 173-304-490.

(5) Inspections. The owner or operator shall inspect the facility to prevent malfunctions and deterioration, operator errors and discharges which may cause or lead to the release of wastes to the environment or a threat to human health. The owner or operator must conduct these inspections often enough to identify problems in time to correct them before they harm human health or the environment. The owner or operator shall keep an inspection log or summary including at least the date and time of inspection, the printed name and the handwritten signature of the inspector, a notation of observations made and the date and nature of any repairs or corrective action. The log or summary must be kept at the facility or other convenient location if permanent office facilities are not on-site, for at least three years from the date of inspection. Inspection records shall be

[illegible] requirements [illegible] d [illegible] water pollution prevention [illegible] pollution prevention [illegible] sance and aesthetics.

[Statutory Authority: RCW [illegible] 88 [illegible] Order 88-28, § 173-304-405, filed [illegible] 88. Statutory Authority: Chapter 43 [illegible] RCW [illegible] (Order 85-[illegible]), § 173-304-405, filed [illegible] 85.]

WAC 173-304-407 General closure and post-closure requirements. (1) Applicability. The requirements of subsections (2), (3), (4), and (5) of this section apply to all solid waste handling facilities. The requirements of subsections (6), (7), and (8) of this section apply to:

(a) Landfills subject to WAC 173-304-460 including limited purpose landfills under WAC 173-304-460(5);

(b) Surface impoundments under WAC 173-304-430 (2)(g) closed with waste remaining in place;

(c) Woodwaste landfills under WAC 173-304-462; and

(d) Landspreading disposal facilities under WAC 173-304-450(2).

(2) Effective dates. Existing facilities subject to the requirements of this section shall meet the applicable facility standards of this section within twelve months of the effective date of this regulation. All new or expanded facilities subject to the requirements of this section shall meet the applicable facility standards on the effective date of this regulation.

(3) Closure performance standard. Each owner or operator shall close their facility in a manner that:

(a) Minimizes the need for further maintenance;

(b) Controls, minimizes, or eliminates threats to human health and the environment from post-closure escape of solid waste constituents, leachate, landfill gases, contaminated rainfall or waste decomposition products to the ground, ground water, surface water, and the atmosphere; and

(c) Prepares the facility for the post-closure period.

(4) Closure plan and amendment(s). Closure as defined in WAC 173-304-100(11), includes but is not limited to grading, seeding, landscaping, contouring, and/or screening. For interim solid waste handling sites, closure includes waste removal and decontamination of the site.

(a) Each owner or operator shall develop, keep and abide by a plan of closure approved by the jurisdictional health department as part of the permitting process in WAC 173-304-600.

(b) The closure plan shall project time intervals at which sequential partial closure is to be implemented,

[illegible] assurance instrument has been executed as required by applicable laws and regulations.

(d) The jurisdictional health department shall approve, disapprove, or require amendment of the closure plan as part of the permitting process of WAC 173-304-600 in accordance with applicable laws and regulations.

(e) Each owner and operator shall close the facility in accordance with the approved closure plan and all approved amendments.

(5) Closure procedures.

(a) Each owner and operator shall notify the jurisdictional health department and where applicable, the financial assurance instrument trustee, of the intent to implement the closure plan in part or whole, no later than one hundred eighty days prior to the projected final receipt of waste at the entire facility unless otherwise specified in the closure plan.

(b) The owner or operator shall commence implementation of the closure plan in part or whole within thirty days after receipt of the final volume of waste and/or attaining the final landfill elevation at part of or at the entire facility as identified in the approved facility closure plan unless otherwise specified in the closure plan.

(c) Waste shall not be accepted for disposal or for use in closure except as identified in the closure plan approved by the jurisdictional health department, as required in subsection (3)(a) of this section.

(d) When facility closure is completed in part or whole, each owner and operator shall submit the following to the jurisdictional health department:

(i) Facility closure plan sheets signed by a professional engineer registered in the state of Washington and modified as necessary to represent as-built changes to final closure construction as approved in the closure plan;

(ii) Certification by the owner or operator, and a professional engineer registered in the state of Washington that the site has been closed in accordance with the approved closure plan.

(e) The jurisdictional health department shall notify the owner or operator and the department of ecology of the date when the facility post-closure period has begun, which period shall commence when the jurisdictional health department has verified the facility has been closed in accordance with the specifications of the approved closure plan and the closure requirements of this section.

(6) Post-closure performance standard. Each owner or operator shall provide post-closure activities to allow for continued facility maintenance and monitoring of air, land, and water as long as necessary for the facility to stabilize and to protect human health and the environment.

[illegible] until the [illegible] ment gas product or [illegible] toring of ground [illegible] safely discontinued.

(b) The post-closure plan shall project time interv at which post-closure activities are to be implement and identify post-closure cost estimates and projec fund withdrawal intervals from the selected financial surance instrument, where applicable, for the associa post-closure costs.

(c) Each owner or operator shall not commence d posal operations in any part of a facility until a po closure plan for the entire facility has been approved the jurisdictional health department, and until a fina cial assurance instrument has been provided where plicable, as required by WAC 173-304-467.

(d) Each owner or operator shall complete the po closure activities in accordance with the approved po closure plan and schedule. Facility post-closure activit shall be completed in accordance with the approv post-closure plan or the plan shall be so amended w the approval of the jurisdictional health department.

(e) The jurisdictional health department may det mine that a facility post-closure plan is invalid and quire an owner or operator to amend the facility po closure plan.

(i) The health department may direct facility po closure activities, in part or whole, to cease until post-closure plan amendment has received written proval by the health department.

(ii) When the health department determines a facil post-closure amendment is required, the health depa ment shall, after consultation with the owner/operat designate a compliance schedule for submittal of amendment and its review and approval by department.

(8) Post-closure procedures.

(a) Each owner or operator shall commence po closure activities after completion of closure activit outlined in subsection (5)(d)(i) and (ii) of this secti The jurisdictional health department may direct t post-closure activities cease until the owner or opera receives a notice to proceed with post-closure activitie

(b) When post-closure activities are complete, owner or operator shall certify to the jurisdictio health department, signed by the owner or operator, a a professional engineer registered in the state Washington stating why post-closure activities are

[illegible]

WAC 173-304-410 Transfer stations, baling and compaction systems, and drop box facilities. (1) Applicability. All transfer stations, baling and compaction systems and drop boxes receiving solid waste from off-site shall meet the requirements of this section. Facilities receiving solid waste from on-site shall meet the requirements of WAC 173-304-200.

(2) Transfer stations, baling and compacting systems standards. Transfer stations, baling and compaction systems shall be designed, constructed, and operated so as to:

(a) Be surrounded by a fence, trees, shrubbery, or natural features so as to control access and be screened from the view of immediately adjacent neighbors, unless the tipping floor is fully enclosed by a building;

(b) Be sturdy and constructed of easily cleanable materials;

(c) Be free of potential rat harborages, and provide effective means to control rodents, insects, birds and other vermin;

(d) Be adequately screened to prevent blowing of litter and to provide effective means to control litter;

(e) Provide protection of the tipping floor from wind, rain or snow other than below grade bins or detachable containers;

(f) Have an adequate buffer zone around the operating area to minimize noise and dust nuisances, and for transfer stations, baling, or compaction systems, a buffer zone of fifty feet from the active area to the nearest property line in areas zoned residential;

(g) Comply with local zoning and building codes including approved local variances and waivers;

(h) Provide pollution control measures to protect surface and ground waters, including run-off collection and discharge designed and operated to handle a twenty-four hour, twenty-five year storm and equipment cleaning and washdown water;

(i) Provide all-weather approach roads, exit roads, and all other vehicular areas;

(j) Provide pollution control measures to protect air quality including a prohibition against all burning and the development of odor and dust control plans to be made a part of the plan of operation in WAC 173-304-405(2);

(k) Prohibit scavenging;

(l) Provide attendant(s) on-site during hours of operation;

(m) Have a sign that identifies the facility and shows at least the name of the site, and, if applicable, hours

[illegible]

[illegible] materials with a [illegible] that prevents the loss of materials [illegible] access by rats and other vermin.

(b) Be located in an easily identifiable place accessible by all-weather roads.

(c) Be designed and serviced as often as necessary to ensure adequate dumping capacity at all times. Storage of solid waste outside the drop boxes is prohibited;

(d) Comply with subsection (2)(m) of this section, signs; and

(e) Remove all remaining wastes at closure, as defined in WAC 173-304-100, to a permitted facility, and remove the drop box from the facility.

[Statutory Authority: Chapter 43.21A RCW. 85-22-013 (Order 85-18), § 173-304-410, filed 10/28/85.]

WAC 173-304-420 Piles used for storage and treatment—Facility standards. (1) Applicability.

(a) This section is applicable to solid wastes stored or treated in piles as defined in WAC 173-304-100 where putrescible wastes (other than garbage) are in place for more than three weeks, other wastes not intended for recycling are in place for more than three months, and garbage is in place for more than three days. These standards are also applicable to composting or storing of garbage and sludge in piles, and to tire piles where more than eight hundred tires are stored at one facility.

(b) Other solid wastes stored or treated in piles prior to waste recycling including compost piles of vegetative waste, piles of woodwaste used for fuel or raw materials are subject to WAC 173-304-300.

(c) Waste piles stored in fully enclosed buildings are not subject to these standards, provided that no liquids or sludges with free liquids are added to the pile.

(d) Inert wastes and demolition wastes are not subject to these standards.

(2) Requirements. All owners and operators shall:

(a) Comply with the requirements of the General facility requirements, WAC 173-304-405;

(b) Design piles located in a one hundred year flood plain to:

(i) Comply with local flood plain management ordinances and chapter 508-60 WAC, Administration of flood control zones; and

(ii) To avoid washout or restriction of flow; and

(c) Remove all solid wastes from the pile at closure to another permitted facility.

(3) Requirements for putrescible wastes or wastes likely to produce leachate.

Draft — MEETING MINUTES

SUBJECT: Additional Geophysical and Remedial Investigations of the Horn Rapids Landfill in the 1100-EM-1 Operable Unit

TO: Attendees
FROM: S. W. Clark
DEPARTMENT: Environmental Engineering Group
DATE OF MEETING: 1/14/91

BUILDING: 450 Hills, Room 35
CHAIRMAN: R. K. Stewart
NUMBER ATTENDING: 20

ATTENDEES:

Vey Allen	PNL	John Anderson	COE
Jeff Ayres	WHC	Steve Clark	WHC
Kathy Davis	GSSC	Dave Einan	EPA
Richard Fink	COE	Bill Green	WHC
Wendell Greenwald	COE	Pieter Hoekstra	BG
Joseph Kunk	WHC	Alan Krug	WHC
M. L. Lauterbach	WHC	Jim McBane	COE
Tom Mitchell	WHC	Fred Roeck	WHC
Gerald Sandness	PNL	Kevin Singleton	WHC
Ward Staubitz	USGS	Bob Stewart	DOE-RL

Meeting Highlights:
The main trenches of buried waste at the Horn Rapids Landfill (HRL) in the 1100-EM-1 operable unit of the Hanford Site were toured on foot on the morning of 1/14/91. Following the tour participants met with geophysics teams from Battelle Pacific Northwest Laboratories (PNL) and Westinghouse Hanford Company (WHC) and discussed doing additional geophysical investigations at the HRL. The U.S. Environmental Protection Agency (EPA) and U.S. Geological Survey (USGS) have two concerns leading them request additional geophysical work: (1) Does the landfill contain collections of buried waste drums?; and (2) Is it safe to drill boreholes in the HRL burial trenches? The position of the U.S. Department of Energy Richland Operations Office (DOE-RL) is that the ground water at the HRL has been contaminated by unspecified upgradient sources and further investigations are not necessary to arrive at a decision to close and continue to monitor the landfill. After lengthy discussion it was agreed that a Statement of Work for electromagnetic induction (EMI) and metal detector surveys on a 10 ft. grid in the areas of the main burial trenches would be written. Anomalies corresponding to the size of a collection of 10 drums will be further investigated by ground penetrating radar (GPR). Anomalies investigated in this manner will be considered for trenching to determine what is actually buried. Discussion of additional borehole drilling is postponed until the geophysical investigations are complete.

Discussion:
Small areas of contaminated soil near the surface of the landfill have been found by surface sampling and vadose zone borehole drilling. Monitoring wells have found the ground water in the vicinity of the landfill to be contaminated with trichloroethene (TCE), nitrates, and radionuclides in excess of primary drinking water standards. It is known that leaks from lagoons at Advanced Nuclear Fuels Corp. (ANF) caused levels of nitrate and dissolved uranium above drinking water

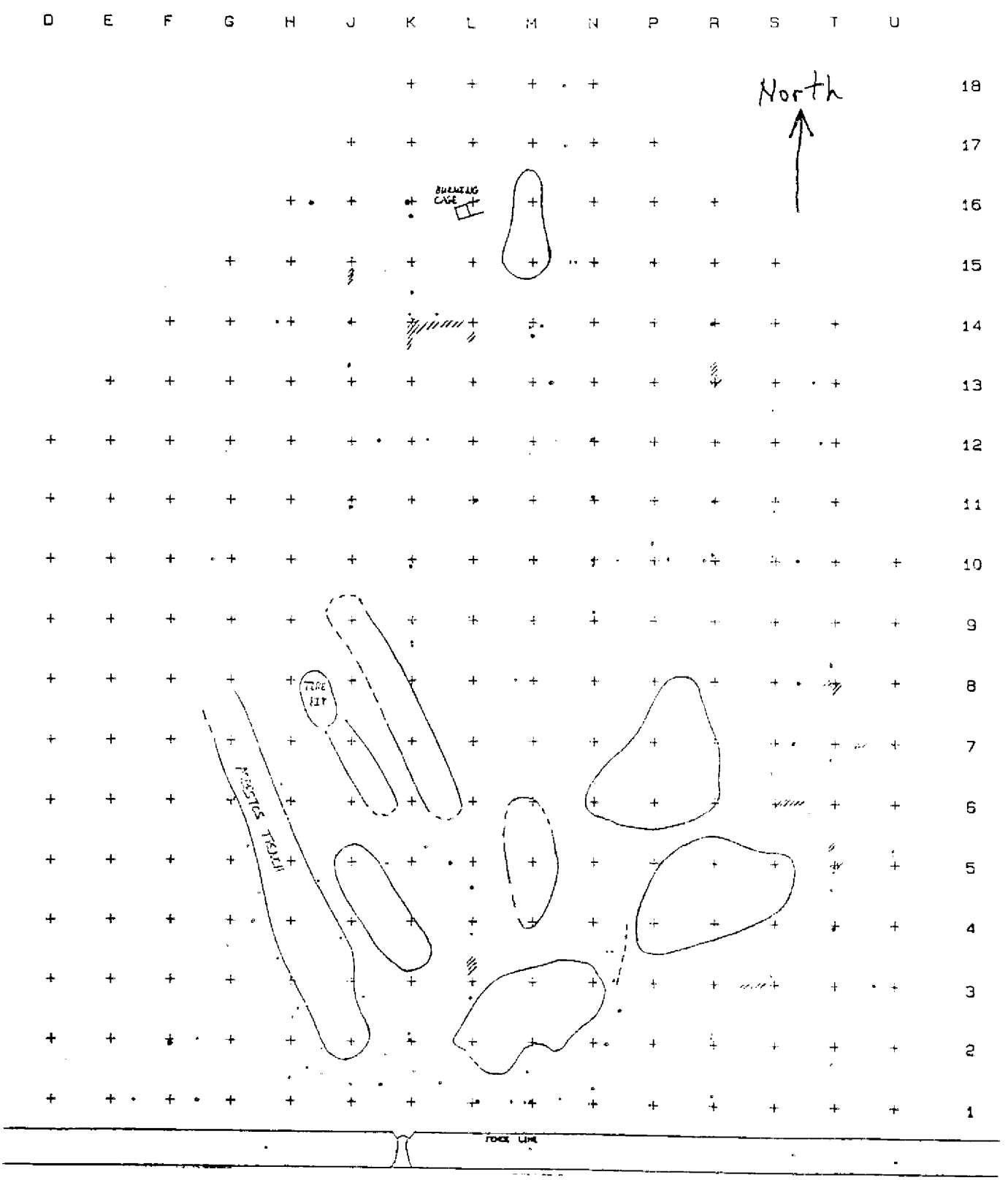
standards at the HRL. Trichloroethane (TCE) analyses of ground water and soil gas upgradient and downgradient of the HRL indicate that ANF is the most likely origin of this contaminant as well. Boreholes for soil sampling were not drilled in the burial trenches during the Phase I remedial investigation for health and safety concerns which are still valid. The borings which were done were adequate to determine that the soils around the burial trenches are not contaminated. If hazardous wastes are buried in the trenches they are apparently not spreading to surrounding areas. Anecdotal information is the only reason an accumulation of drums is suspected to exist in the burial trenches at the HRL. Additional drilling has a very low probability of actually finding any concentration of drums which may be buried in the 50 acre landfill.

The EPA contends that because boreholes were not drilled into burial trenches as scheduled in the original remedial investigation/feasibility study work plan for the 1100-EM-1 operable unit (DOE/RL 88-23, August 1989) this work must now be done. Also, geophysical investigation of the landfill on the original 100 ft. grid is believed to have been inconclusive for determination of whether or not concentrations of disposed drums may be buried in the HRL.

The PNL team who did the original geophysical investigations stated that the work was intended as a reconnaissance to find major features. The investigations, using ground penetrating radar (GPR), electromagnetic induction (EMI), and a metal detector, showed several prominent trenches in the south-central part of the landfill and areas of relatively shallow dispersed debris in the southeastern part of the HRL. A significant anomaly was also found near the burn cage, in the northern part of the landfill. It was agreed that a 500 x 900 ft. area in the south-central HRL and a 200 x 300 ft. area in the northern part of the HRL (highlighted on the attached map) would be investigated on a 10 ft. grid spacing with EMI and metal detectors. If significant anomalies were found they would be further investigated with GPR.

After considerable discussion it was agreed that no anomalies smaller than the signature of ten (10) drums would be investigated. EMI and metal detection will be run on a 10 ft. grid in the two selected areas of the HRL. A statement of work will be written by Mr. Sandness of PNL and reviewed by Mr. Hoekstra of Blackhawk Geophysics (BG) to have the geophysical investigations done in two phases: 1) EMI and metal detector to find anomalies of ten drums or larger; followed by 2) GPR to determine if anomalies should be investigated by trenching.

Discussion of the EPA's request for additional drilling in the HRL is postponed pending the results of the geophysical investigations.



Burial Trenches Identified by Geophysical Reconnaissance at the Horn Rapids Landfill

Grid = 100' X 100'

MEETING MINUTES

Subject: ADDITIONAL GEOPHYSICAL AND REMEDIAL INVESTIGATIONS OF THE HORN RAPIDS LANDFILL IN THE 1100-EM-1 OPERABLE UNIT

TO: DISTRIBUTION BUILDING:

FROM: S. W. Clark WHC CHAIRMAN: R. K. Stewart DOE-RL

Dept-Operation-Component	Area	Shift	Meeting Date	Number Attending
Environmental Engineering Group	3000		Jan. 14, 1991	20

ATTENDEES:

Vey Allen	PNL	John Anderson	COE
Jeff Ayres	WHC	Steve Clark	WHC
Kathy Davis	GSSC	Dave Einan	EPA
Richard Fink	COE	Bill Green	WHC
Wendell Greenwald	COE	Pieter Hoekstra	BG
Joseph Kunk	WHC	Alan Krug	WHC
M. L. Lauterbach	WHC	Jim McBane	COE
Tom Mitchell	WHC	Fred Roeck	WHC
Gerald Sandness	PNL	Kevin Singleton	WHC
Ward Staubitz	USGS	Bob Stewart	DOE-RL

Meeting Highlights:
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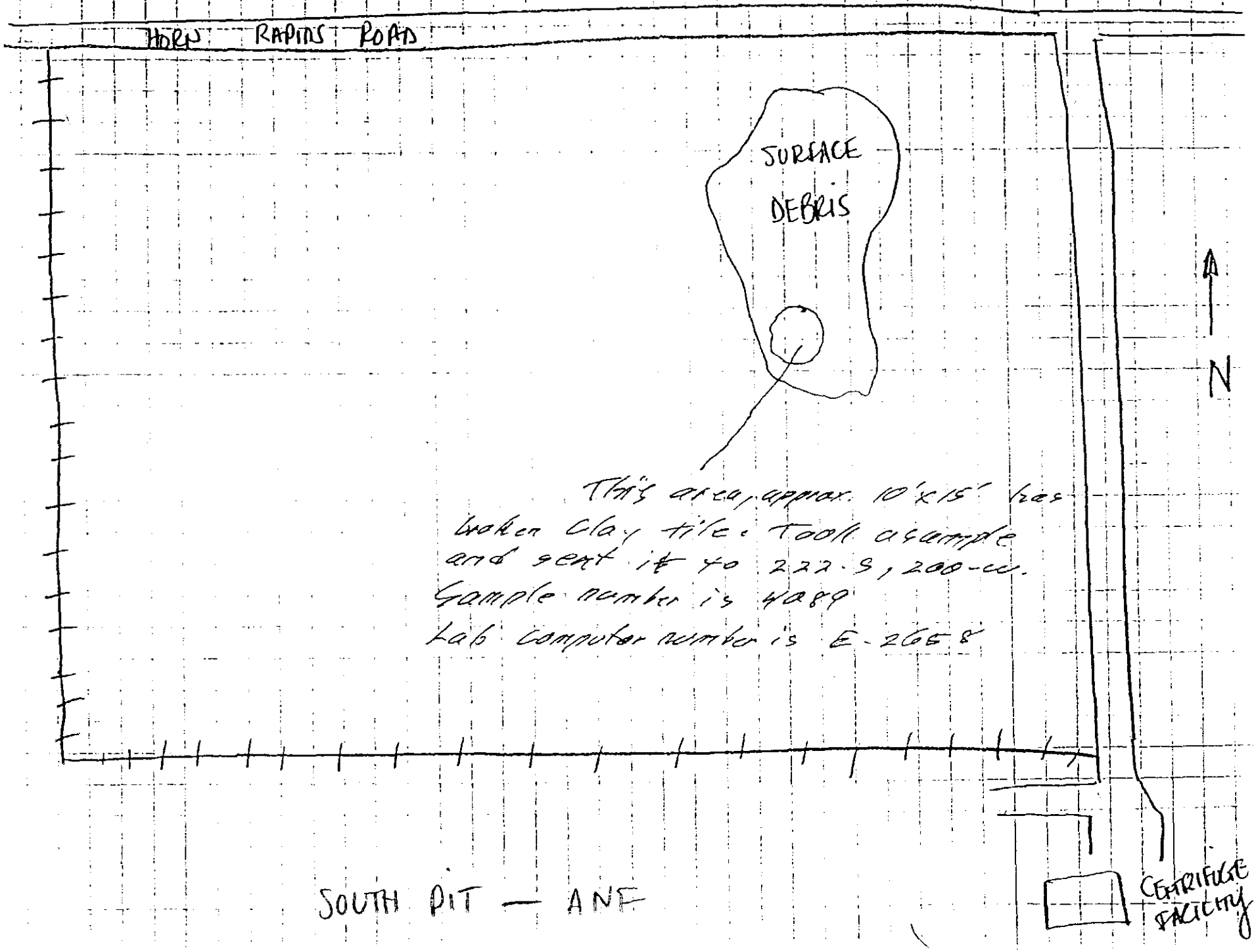
Discussion:
Small areas of contaminated soil near the surface of the landfill have been found by surface sampling and vadose zone borehole drilling. Monitoring wells have found the ground water in the vicinity of the landfill to be contaminated with trichloroethene (TCE), nitrates, and radionuclides in excess of primary drinking water standards. It is known that leaks from lagoons at Advanced Nuclear Fuels Corp. (ANF) caused levels of nitrate and dissolved uranium above drinking water standards at the HRL.

10-15-90 K.G. Mitchell 61155



Westinghouse
Hanford Company

Internal
Memo

From: Technical Baseline Section
Phone: 6-5122 H4-55
81223-91-001
Date: January 10, 1991
Subject: TECHNICAL MEMORANDUM DOCUMENTING RESULTS OF RADIATION SURVEYS CONDUCTED IN THE 1100-EM-1 OPERABLE UNIT

To: S. W. Clark H4-55

cc: R. P. Henckel H4-55
M. J. Lauterbach H4-55
S. G. Weiss H4-55
RMM: File/LB

SCOPE

This technical memorandum documents the results of radiation surveys conducted to determine the existence of radiological contamination at disposal sites within the 1100-EM-1 Operable Unit. Radiation surveys were conducted at the 1100-6 (discolored soil site) and the South Pit located on land belonging to Advanced Nuclear Fuels, Inc.

PROCEDURES

A tractor-mounted radiation monitor (Mobile Surface Contamination Monitor) was utilized at the South Pit on October 15, 1991 in all accessible areas. Health Physics Technicians surveyed all other areas on foot. Procedures for the MSCM are included in the technical document entitled, "1100 Area Radiation Surveys" (WHC-MR-0098). The 1100-6 site was surveyed by hand on October 16, 1990.

RESULTS

No radiological contamination above background levels was detected at either of the surveyed sites. A sample of clay pipe was submitted for laboratory analysis. The results of that analysis are attached. All radionuclide values were less than one picocurie per gram.

RECORDS

Copies of the associated Radiation Survey Reports and maps are attached, as well as pertinent pages from logbook WHC-N-293(2). Copies are also stored in files under the supervision of S. W. Clark, Room 24, 450 Hills Street. The logbook is in the custody of R. M. Mitchell. Radiation Survey Reports and other original documentation dealing with task details are in the custody of the Health Physics Technologists.

RM Mitchell

R. M. Mitchell
Principal Scientist

st

Attachments

Westinghouse Hanford Company

RADIATION SURVEY REPORT

Date	Time	Survey Number	F.C.
10-18-90	From NA To NA	72015	

Bldg	Area	Room
NA	1100 Area	NA

Description of Job: Perform Survey of 400' x 600' area South of the Horn Rapids Landfill using MSCM (Mobil Surface Contamination Monitor) JEA Number -1100-90-1 Survey was performed on 10-15-90

RWP No. NA

Location: South of Horn Rapids Landfill

Check if appropriate. When checked, do not place unrelated information on this record.

- ☐ Personnel Contamination
- ☐ CAM/Radiation Alarm
- ☐ Establish Dose Rates
- ☐ Radiation/Contamination Incident
- ☐ High Radiation Level Work
- ☒ "Special Survey"
- ☐ Property Release
- ☐ RAM Shipment

Item No	PER (1)	Description of Work Performed, Radiation Controls, and Measurements	Meter Deflection W/O	Meter Deflection W/C	Dist	CF	Dose Rate: beta (non pen) mrad/hr	Dose Rate: gamma (pen) mR/hr	Dose Rate: neutron mrem/hr	Direct (dpm) beta	Direct (dpm) alpha	Smear 100 cm² beta (d/m)	Smear 100 cm² alpha (d/m)	Smear 100 cm² mrad/hr
1		All areas surveyed with MSCM were less than 40 cps Gamma less than 50 cpm beta												
2		A sample of some Clay tile was taken and sent to the 222-S Lab 200-W Sample number -4089. Lab computer number is E-2658.												

1 Check for personnel dose rate ☐ Continued on supplemental report form

Instrument(s) Used	☐ CP	☐ G-M Pancake	☐ PAM	☐	☐	☐
Serial No (s)	—	1523 / 808	—	—	—	—

ESTIMATED PERSONNEL DOSE RATES

Phase of Work	Based on Measurement(s)	Average Dose Rate	Limit Applying
			WBP S E
			WBP S E
			WBP S E

Respiratory Protection Worn

- ☐ Supplied Air
- ☐ Filter
- ☐ Other
- ☒ None

RPT Exposure	Work Location Code	Signed / PR No
NA	NA	[signature] / 6155

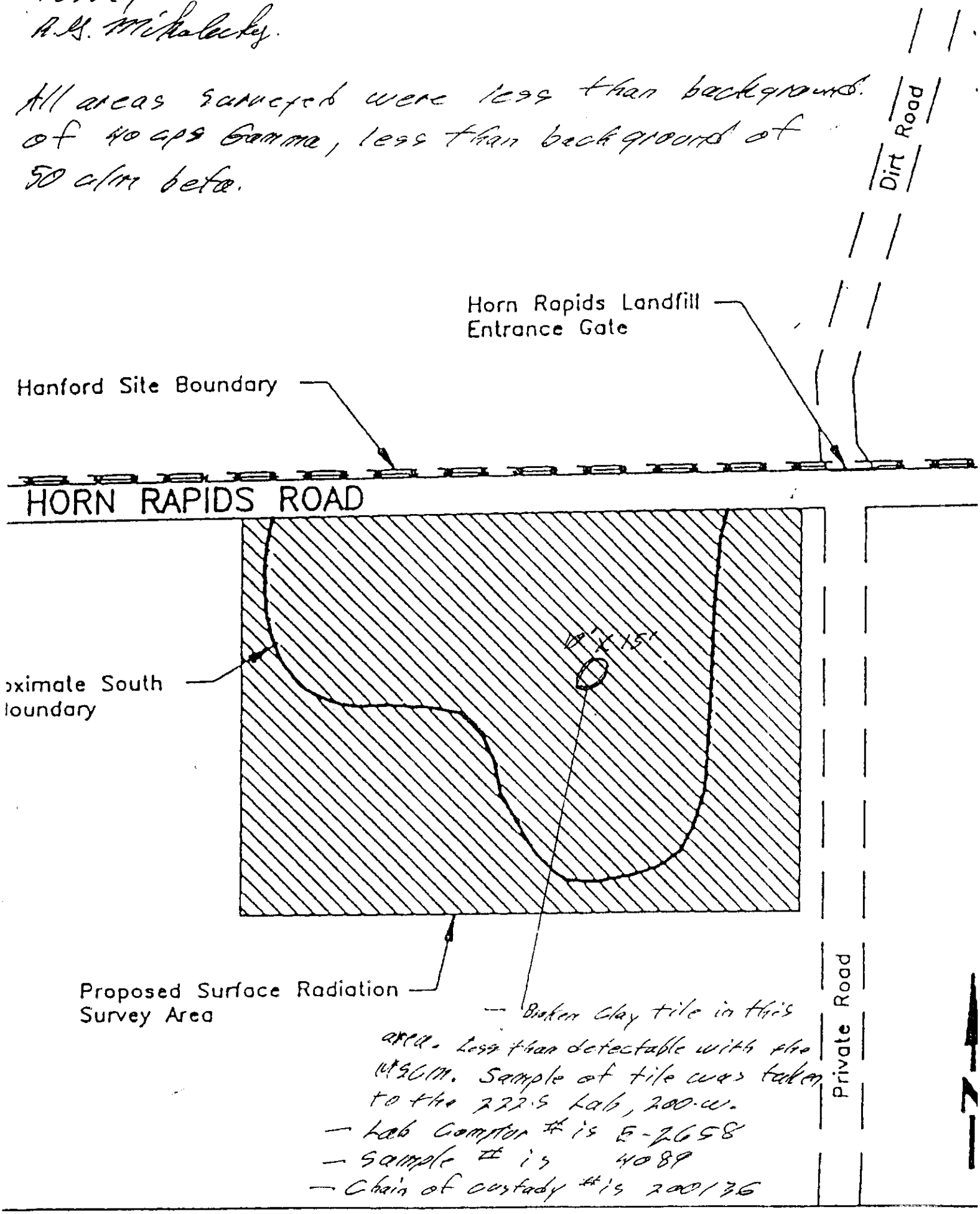
Did you increase or reduce RWP requirements for this work? ☒ No ☐ Yes Explain on reverse side

Did you attend a pre-job meeting for this work? ☒ N A ☐ No ☐ Yes

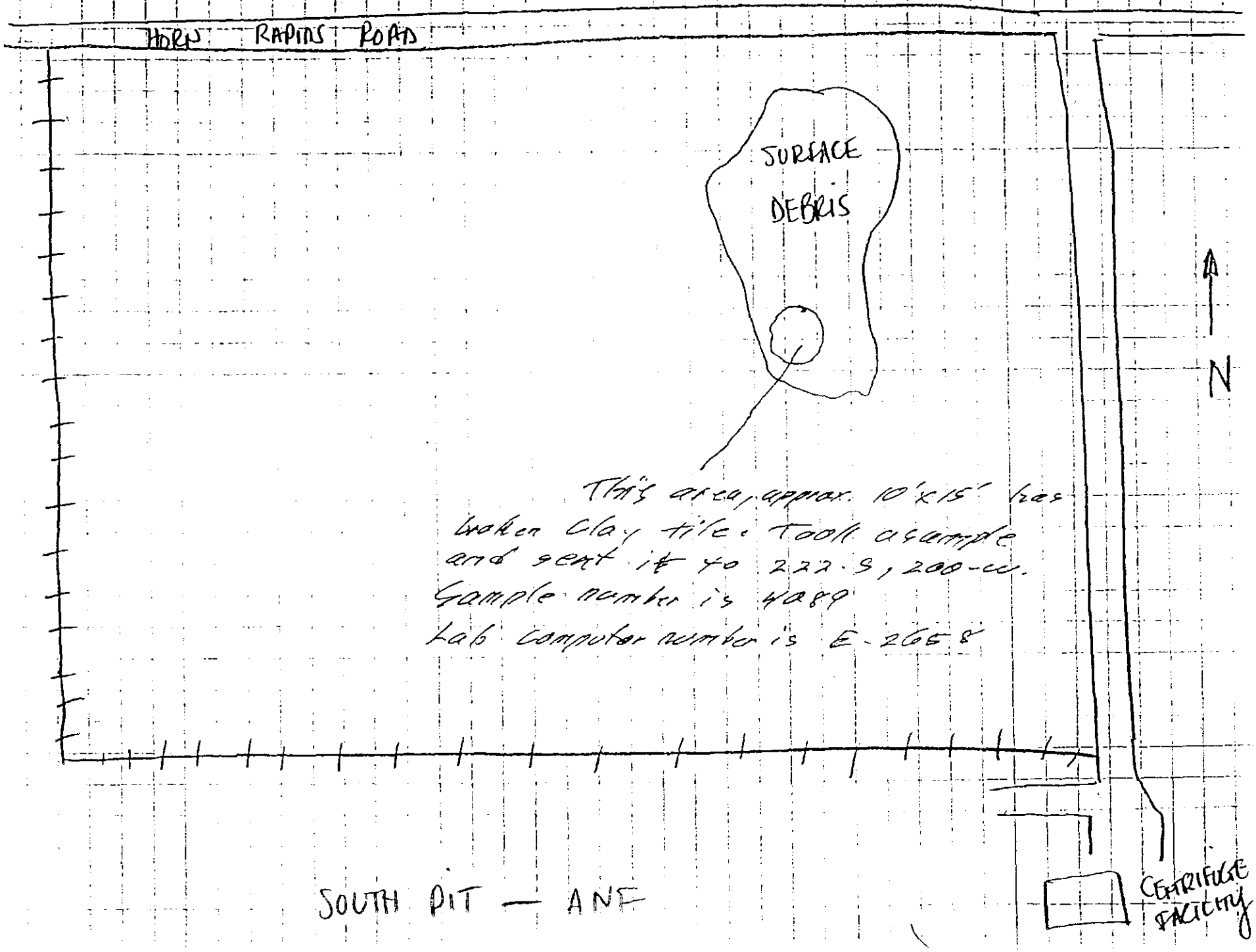
Reviewed By: [signature] Date: 10-18-90

Survey # 72015 - Done 10-15-96
A.S. Mikalecky.

All areas surveyed were less than background of 40 cps Gamma, less than background of 50 c/m beta.



10-15-90 K.G. Mitchell 61155



Westinghouse Hanford Company

RADIATION SURVEY REPORT

Date	Time	Survey Number	F.C.
10-18-90	From NA To NA	72016	X
Bldg	**Area**	**Room**	
NA	1100	NA	

Description of Job: Reclaim survey at Area approx 50' X 300' North of the 1171 building, 1100 Area. Survey done on 10-16-90

RWP No. NA

Location: North of 1171 building

Check if appropriate. When checked, do not place unrelated information on this record

- ☐ Personnel Contamination
- ☐ CAM/Radiation Alarm
- ☐ Establish Dose Rates
- ☐ Radiation/Contamination Incident
- ☐ High Radiation Level Work
- ☒ "Special Survey"
- ☐ Property Release
- ☐ RAM Shipment

Item No	PER (1)	Description of Work Performed, Radiation Controls, and Measurements	Meter Deflection W/O	Meter Deflection W/C	Dist	CF	DOSE RATE beta (non pen) mrad/hr	DOSE RATE gamma (pen) mR/hr	DOSE RATE neutron mrem/hr	CONTAMINATION LEVELS Direct (dpm) beta	Direct (dpm) alpha	Smear 100 cm² beta (d/m)	Smear 100 cm² alpha (d/m)	Smear 100 cm² mrad/hr
1		All direct surveys performed on this site.	NA	NA	NA		NA	NA	NA	< 0	NA	NA	NA	NA

(1) Check for personnel dose rate ☐ Continued on supplemental report form

Instrument(s) Used	☐ CP	☐ G-M Pancake	☐ PAM	☐	☐	☐
Serial No (s)	—	1523 / 808	—	—	—	—

ESTIMATED PERSONNEL DOSE RATES

Phase of Work	Based on Measurement(s)	Average Dose Rate	Limit Applying
			WBP S E
			WBP S E
			WBP S E

Respiratory Protection Worn

- ☐ Supplied Air
- ☐ Filter
- ☐ Other
- ☒ None

RPT Exposure	Work Location Code	Signed / PR No
NA	NA	Signed [signature] PR No 01155

Did you increase or reduce RWP requirements for this work? ☒ No ☐ Yes Explain on reverse side

Did you attend a pre-job meeting for this work? ~~☒ NA~~ ☐ No ☒ Yes

Reviewed By: D L Stark Date: 10-18-90

ER 8068-11

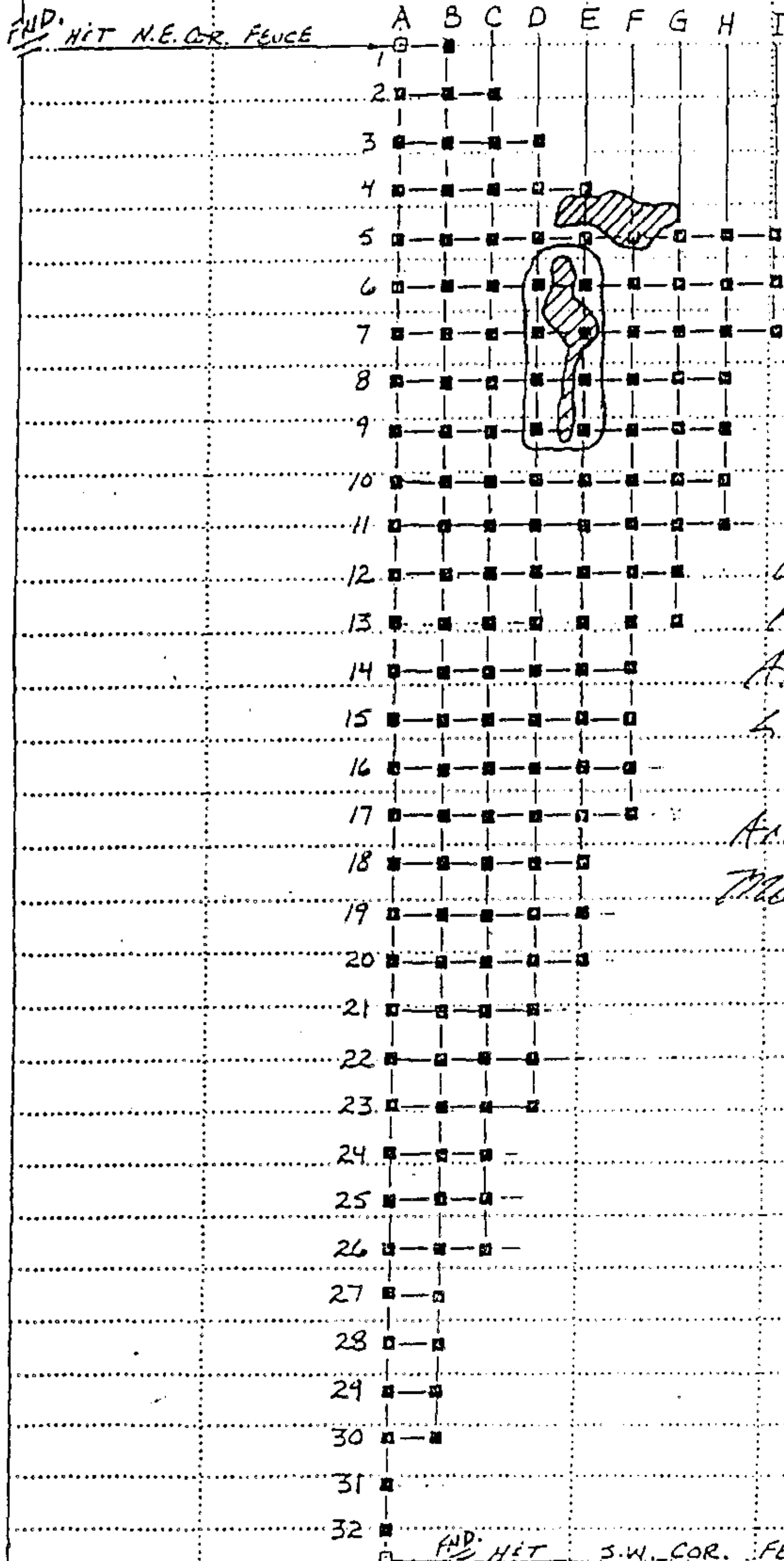
KAISER ENGINEERS HANFORD — FIELD SURVEY NOTES — 12-22-88 — 1 / 1 — 11028-0147

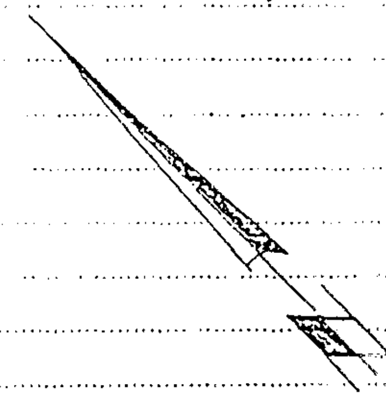
Title: 1100-EM-1 OPERABLE UNIT — 884-382

Crew: FASTABEND - WRAY - MILLER — Weather: OVERCAST, COOL, CALM

Inst. WILD T-1 #53816 — Temp. ±30°F. — N/A — N/A

LAYOUT 10' GRID ON "DISCOLORED SOIL SITE" — 4





Surveyed this area with E&m #1573 and P-11 #908.
All readings observed < Bkgd. at 50 c/m.

Area Surveyed 10-16-90
McKeehuly 61155

SAMPLE STATUS REPORT FOR E 2658. SCHMIDT 4089 TIME: 10/31/90 13:34
DISPATCHED: 10/16/90 8:31 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 10/18/90 11:10

EXT.	DETER.	RESULTS OR STATUS			OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********			***	***	******
2182	GEA-V&A	< 4.39000E-01	PICI/G	Cs-137	N	Y	W4A52
3682	Sr-V&A	< 2.96000E-01	PICI/G		N	Y	W4A52
4471	U-VEG	1.25000E-07	G/G		N	Y	W4A52

END OF REPORT

Clay Pipe - 1100 Area

RWS
11-21-90

PROPOSAL FOR REDUCTION OF GROUND WATER MONITORING ANALYSES

The number and cost of analyses for ground water monitoring in the 1100-EM-1 operable unit is proposed to be reduced by implementing the following measures:

1) For three quarters of each year only analyze of contaminants of concern at each well.

2) During the fourth quarter of each year full CLP and drinking water standards analyses would be performed.

3) At MW-18 (the new monitoring well at subunit 1100-2) full CLP and drinking water standards analyses would be obtained for four quarters.

4) Analytes of interest to the City of Richland will be assayed for at the following wells:

    699-S37-E14
    699-S40-E14
    699-S41-E13A
    699-S41-E13B
    699-S43-E12

FACT SHEET FOR LAND USE ASSESSMENT

The U.S. Department of Energy Richland Operations Offices will not do a risk assessment to a residential scenario for several reasons:

1) DOE-RL does not ever foresee a land use other than industrial for the 1100-EM-1 operable unit.

2) Doing a risk assessment to a residential scenario would be precedent-setting. It would send the political message that the 1100-EM-1 operable unit is being considered for residential purposes when, in fact, it will never be considered for residences.

3) There is no Federal land use law which has any tie to local authority. However, Federal environmental law gives precedence to state and local environmental regulations. Tieing of risk assessment and land use together is dangerous because it would create validity to local claims for land use jurisdiction on the Hanford Site.

4) Because of the existence of the 300 Area, Advanced Nuclear Fuels Corp., and the Richland Industrial Park the parts of the 600, 1100, and 3000 areas included in the 1100-EM-1 operable unit are not considered to have any future other than industrial. The City of Richland has made it clear that the Horn Rapids Triangle is to be an industrial park. The potato plots west of the 1100 Area are an interim use for the land, the phase-out of which is clearly documented in the City's lease agreement.

5) DOE-RL's position regarding land use planning for the Hanford Site is that they will work together with local authorities to coordinate and make compatible land use plans. However, in the case of the 1100-EM-1 operable unit, the existing and planned use of adjacent lands is clearly industrial.

ATTACHMENT 11

1100-EM-1 Operable Unit
Dates for Deliverables

Status Date: January 23, 1991

	Current	Requested
RI Phase 1 Report:		
o* RI Phase 1 Report to Regulators	8/31/90	(Complete)
o Regulatory Comments to WHC	10/15/90	(Complete)
o Disposition Regulatory Comments	11/15/90	(Complete)
FS Phase 1 & 2 Report:		
o FS Phase 1 & 2 Report to DOE-RL	9/07/90	(Complete)
o FS Reviewers Comments to WHC	10/08/90	(Complete)
o** FS Phase 1 & 2 Report to Regulators	12/21/90	12/21/90
o Regulatory Comments to WHC	2/21/91	2/21/91
o Revised FS Report to Regulators	3/18/91	3/18/91
o 2nd Regulatory Comments to WHC	4/17/91	4/17/91
o Finalize FS Phase 1 & 2 Report	5/17/91	5/17/91
RI Phase 2 Work Plan Supplement:		
o* Work Plan Supplement to Regulators	10/01/90	(Complete)
o RI Phase 2 Field Activities	10/15/90	(Started)
o Regulatory Comments to WHC	11/15/90	(Complete)
o Integrate FS comments into RI	-	3/01/91
o 2nd Regulatory Comments to WHC	-	4/01/91
o Finalize RI Phase 2 Work Plan Suppl.	1/15/91	5/01/91
RI Phase 2 Report:		
o Draft RI Phase 2 Report to DOE-RL	4/15/92	7/15/92
o Reviewers Comments compiled	5/15/92	9/30/92
o* RI Phase 2 Report to Regulators	6/30/92	11/30/92
o Regulatory Comments received	8/15/92	1/15/93
o Revised RI Report to Regulators	9/30/92	2/26/93
o 2nd Regulatory Comments to WHC	10/31/92	3/29/93
o Finalize RI Phase 2 Report	11/30/92	4/30/93
FS Phase 3 Report:		
o FS Phase 3 Report to DOE-RL	8/31/92	1/29/93
o FS Reviewers Comments compiled	9/30/92	3/01/93
o** FS Phase III Report to Regulators	11/30/92	5/14/93
o Public Review of FS Phase III Report	6/30/93	1/04/94

* Target Date from TPA Action Plan Work Schedule
** Milestone from TPA Action Plan Work Schedule

ATTACHMENT 12

1100-EM-1 Operable Unit
SCHEDULE OF PHASE 2 RI ACTIVITIES

Status Date: January 23, 1991

October 18, 1990:	Completed radiation surveys in the South Pit area.
November 1, 1990:	Began geophysical surveys at the South Pit.
November 6, 1990:	Began soil gas surveys at the Horn Rapids Landfill.
11/26-12/5/90:	4th round of ground water monitoring well sampling.
12/90 - 1/91:	Soil gas surveys at the Horn Rapids Landfill, South Pit, and UN-1100-6.
January, 1991:	Drilling one ground water monitoring well at subunit 1100-2.
February, 1991:	Surface and sub-surface soils sampling at selected waste sites.
February, 1991:	Scheduled round of quarterly ground water sampling.
	Drill ground water monitoring wells in the vicinity of the Horn Rapids Landfill.
May, 1991:	Scheduled round of quarterly ground water sampling.
May 15, 1991:	Surface and sub-surface soil sample analyses returned.
June, 1991:	Vadose zone characterization boreholes in the vicinity of the Horn Rapids Landfill, South Pit, and UN-1100-6.
June, 1991:	Additional surface and sub-surface soil sampling.
August, 1991:	Scheduled round of quarterly ground water sampling.
November, 1991:	Scheduled round of quarterly ground water sampling.
April 1, 1992:	RI Phase 2 data complete.
Nov. 30, 1992:	RI Phase 2 Report to Regulators

1100-EM-1 Operable Unit Managers Meeting
January 23, 1991

Distribution:

Chuck Cline, WDOE
Ward Staubitz, USGS
Mike Thompson, DOE-RL (A6-95)
Mary Harmon, DOE-HQ, (EM-442)
Kathy Davis, SWEC (A4-35)
John Stewart, USACE
Jack Waite, WHC (B2-35)
Tom Wintczak, WHC (B2-15)
Mel Adams, WHC (H4-55)
Steven Clark, WHC (H4-55)

Brian Sprouse, WHC (H4-22)
Diane Clark, DOE-RL (A5-55)
Bill Price, WHC (S0-03)
Don Kane, Battelle EMO (K1-74)
Donna Lacombe, PRC
Jim Patterson, WHC

Ronald D. Izatt (A6-95)
Director, DOE-RL, ERD
June M. Hennig (A5-21)
DOE-RL, WMD

Roger D. Freeberg (A6-95)
Chief, Rstr. Br., DOE-RL,ERD

Steven H. Wisness
TPA Proj. Mgr.
Richard D. Wojtasek (B2-15)
Prgm. Mgr. WHC

Kaerae Parnell (H4-18)
Doug Sherwood, EPA (B5-01)
Michael Neely, PNL (K6-96)

ADMINISTRATIVE RECORD: 1100-EM-1; Care of Susan Wray, WHC (H4-51C)

Please contact Kathy Davis if there are any deletions or additions to this list.